

## CLAIMS

Although a preferred embodiment of the present invention has been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it will  
5 be understood that the invention is not limited to the embodiments disclosed, but is capable of numerous rearrangements, modifications, and substitutions without departing from the spirit of the invention as set forth and defined by the following claims.

10 What is claimed is:

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1. A NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
system comprising:

(a) a terminal data interface;

(b) an adapter database toolkit;

5 (c) an operator interface; and

(d) network element specific storage media;

wherein

said terminal data interface incorporates said toolkit  
to permit translation of said storage media to  
create an adapter database;

said adapter database permits creation of editable  
command fields on said operator interface in  
response to the contents of said storage media;  
and

15 said command fields are combined to create a valid  
command that can be sent to a network element in a  
telecommunications network.

2. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said editable command fields comprise a non-editable combo box.

3. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said operator interface comprises a menubar interface further comprising FILE, PREFERENCES, RESPONSES, COMMANDS, and HELP menus.

4. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said operator interface comprises a command window.

5. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said operator interface comprises a response window.

6. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said operator interface comprises a command creation panel.

7. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 5 wherein said command creation panel comprises a command code tree.

8. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 5 wherein said command creation panel comprises a command parameter panel.

9. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 8 wherein said command creation panel comprises a command string panel.

10. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said storage media is a CDROM.

11. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein one or more components of said system is implemented within an application programming interface (API).

12. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said communication occurs through a serial port connection.

13. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein said communication occurs over the Internet.

14. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 1 wherein one or more components of said system is implemented on a personal computer (PC).

15. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 14 wherein said personal computer utilizes a HP-UX™ operating environment.

16. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 14 wherein said personal computer utilizes a LINUX™ operating environment.

17. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 14 wherein said personal computer utilizes a SOLARIS™ operating environment.

18. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 14 wherein said personal computer utilizes a UNIX™ operating environment.

19. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) system of Claim 14 wherein said personal computer utilizes a Microsoft® Windows™ operating environment.

20. A NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)

Operator/User Interface system comprising:

(a) menubar;

(b) command window;

5 (c) response window; and

(d) command creation panel;

wherein

said menubar permits an operator to select various  
interface command functions;

10 said command window displays operator commands sent to  
a network element;

said response window displays information from said  
network element in response to said operator  
commands;

15 said command creation panel permits said operator to  
select network element commands based on a command  
code tree and optional command parameter panel;

20 said command creation panel contains an optional  
command string panel for the assembly of said  
operator commands in response to selections by

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said operator from said command code tree as  
augmented by said command parameter panel; and

said command code tree is created in response to  
information retrieved from an adapter database.

21. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
Operator/User Interface system of Claim 20 wherein said  
menubar further comprises FILE, PREFERENCES, RESPONSES,  
COMMANDS, and HELP menus.

22. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
Operator/User Interface system of Claim 20 wherein one  
or more components of said system is implemented within  
an application programming interface (API).

23. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
Operator/User Interface system of Claim 20 wherein one  
or more components of said system is implemented on a  
personal computer (PC).

24. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
Operator/User Interface system of Claim 23 wherein said  
personal computer utilizes a HP-UX™ operating  
environment.

25. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) Operator/User Interface system of Claim 23 wherein said personal computer utilizes a LINUX™ operating environment.

5 26. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) Operator/User Interface system of Claim 23 wherein said personal computer utilizes a SOLARIS™ operating environment.

10 27. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) Operator/User Interface system of Claim 23 wherein said personal computer utilizes a UNIX™ operating environment.

15 28. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) Operator/User Interface system of Claim 23 wherein said personal computer utilizes a Microsoft® Windows™ operating environment.



29. A NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)

method comprising:

(1) entering connection method, network address, user identifier and password information;

5 (2) making a connection to a network element and logging on said network element;

(3) sending and receiving commands to said network element to determine its type and version;

10 (4) opening and reading appropriate files to create command trees for said network element;

(5) permitting a user to select commands from said command trees;

(6) retrieving command parameters from said files;

(7) creating editable fields for each said parameter;

15 (8) building commands for said network elements as values are filled in for said parameters;

(9) sending said commands to said network element; and

(10) optionally writing responses to said commands to a response display;

20 wherein

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said connections occur via a network communication means.

30. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said selected commands are entered via an editable command field.

31. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said selected commands are entered via a non-editable combo box.

32. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said selected commands are activated via an operator interface comprising a menubar interface further comprising FILE, PREFERENCES, RESPONSES, COMMANDS, and HELP menus.

33. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said sent commands are displayed within a command window operator interface.

34. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said response display comprises a response window within an operator interface.

35. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said command trees are displayed in a command code tree within a command creation panel operator interface.

5 36. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said command parameters are displayed in a command parameter panel within a command creation panel operator interface.

10 37. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said built commands are displayed in a command string panel within a command creation panel operator interface.

38. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said files comprise XML.

15 39. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein one or more steps of said method is implemented within an application programming interface (API).

20 40. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said communication occurs through a serial port connection.

41. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein said communication occurs over the Internet.

42. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 29 wherein one or more steps of said method is implemented on a personal computer (PC).

43. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 42 wherein said personal computer utilizes a HP-UX™ operating environment.

44. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 42 wherein said personal computer utilizes a LINUX™ operating environment.

45. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 42 wherein said personal computer utilizes a SOLARIS™ operating environment.

46. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 42 wherein said personal computer utilizes a UNIX™ operating environment.

47. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 42 wherein said personal computer utilizes a Microsoft® Windows™ operating environment.

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(20) repeating steps (1)-(10) as necessary for each network element type and/or version.

49. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 48 wherein said I/O manual storage medium is a CDROM.

50. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 48 wherein said TL1DAT storage medium is a CDROM.

51. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 48 wherein said files comprise XML.

52. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 48 wherein one or more steps of said method is implemented within an application programming interface (API).

53. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 48 wherein one or more of said storage media is accessed over the Internet.

54. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 48 wherein one or more steps of said method is implemented on a personal computer (PC).

55. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 54 wherein said personal computer utilizes a HP-UX™ operating environment.

56. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 54 wherein said personal computer utilizes a LINUX™ operating environment.

57. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 54 wherein said personal computer utilizes a SOLARIS™ operating environment.

58. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 54 wherein said personal computer utilizes a UNIX™ operating environment.

59. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 54 wherein said personal computer utilizes a Microsoft® Windows™ operating environment.

60. A NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
adapter database method comprising:

(21) generating I/O source documents for a network  
element;

5 (22) converting said I/O source documents to a standard  
file format and optionally inserting hidden tags  
if necessary to flag specific adapter database  
data;

10 (23) extracting command information from said standard  
file format to generate an XML file for an adapter  
database;

(24) extracting a command function menu from said  
standard file format to generate an XML File for  
said adapter database; and

15 (25) repeating steps (1)-(4) for each network element  
type and version.

61. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
method of Claim 60 wherein one or more steps of said  
method is implemented using PERL scripts.

20 62. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
method of Claim 60 wherein one or more steps of said  
method is implemented on a personal computer (PC).



63. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
method of Claim 62 wherein said personal computer  
utilizes a HP-UX™ operating environment.

64. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
method of Claim 62 wherein said personal computer  
utilizes a LINUX™ operating environment.

65. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
method of Claim 62 wherein said personal computer  
utilizes a SOLARIS™ operating environment.

66. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
method of Claim 62 wherein said personal computer  
utilizes a UNIX™ operating environment.

67. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI)  
method of Claim 62 wherein said personal computer  
utilizes a Microsoft® Windows™ operating environment.

68. A NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) I/O manual file definition method comprising:

(1) generating an I/O manual source documentation XML file for a network element;

(2) incorporating network element specific data fields within said I/O manual XML file;

(3) filtering terminal data interface information from said I/O manual XML file to generate a terminal data interface module software interface;

(4) repeating step (3) for each desired terminal data interface module to be extracted; and

(5) repeating steps (1)-(4) for each network element type and version.

69. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 68 wherein one or more steps of said method is implemented using PERL scripts.

70. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 68 wherein one or more steps of said method is implemented on a personal computer (PC).

71. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 70 wherein said personal computer utilizes a HP-UX™ operating environment.

72. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 70 wherein said personal computer utilizes a LINUX™ operating environment.

73. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 70 wherein said personal computer utilizes a SOLARIS™ operating environment.

74. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 70 wherein said personal computer utilizes a UNIX™ operating environment.

75. The NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) method of Claim 70 wherein said personal computer utilizes a Microsoft® Windows™ operating environment.

76. A computer usable medium having computer-readable program code means providing NETWORK ELEMENT TERMINAL DATA INTERFACE (NETDI) functionality, said computer-readable program means comprising:

- 5 (1) computer program code means for entering connection method, network address, user identifier and password information;
- (2) computer program code means for making a connection to a network element and logging on  
10 said network element;
- (3) computer program code means for sending and receiving commands to said network element to determine its type and version;
- (4) computer program code means for opening and  
15 reading appropriate files to create command trees for said network element;
- (5) computer program code means for permitting a user to select commands from said command trees;
- (6) computer program code means for retrieving command  
20 parameters from said files;
- (7) computer program code means for creating editable fields for each said parameter;

(8) computer program code means for building commands  
for said network elements as values are filled in  
for said parameters;

(9) computer program code means for sending said  
5 commands to said network element; and

(10) computer program code means for optionally writing  
responses to said commands to a response display.

wherein

said connections occur via a network communication  
10 means.

77. The computer usable medium of Claim 76 wherein said  
selected commands are entered via an editable command  
field.

78. The computer usable medium of Claim 76 wherein said  
15 selected commands are entered via a non-editable combo  
box.

79. The computer usable medium of Claim 76 wherein said  
selected commands are activated via an operator  
interface comprising a menubar interface further  
20 comprising FILE, PREFERENCES, RESPONSES, COMMANDS, and  
HELP menus.

80. The computer usable medium of Claim 76 wherein said sent commands are displayed within a command window operator interface.

81. The computer usable medium of Claim 76 wherein said response display comprises a response window within an operator interface.

82. The computer usable medium of Claim 76 wherein said command trees are displayed in a command code tree within a command creation panel operator interface.

83. The computer usable medium of Claim 76 wherein said command parameters are displayed in a command parameter panel within a command creation panel operator interface.

84. The computer usable medium of Claim 76 wherein said built commands are displayed in a command string panel within a command creation panel operator interface.

85. The computer usable medium of Claim 76 wherein said files comprise XML.

86. The computer usable medium of Claim 76 wherein one or more steps of said functionality is implemented within an application programming interface (API).

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87. The computer usable medium of Claim 76 wherein said communication occurs through a serial port connection.

88. The computer usable medium of Claim 76 wherein said communication occurs over the Internet.

5 89. The computer usable medium of Claim 76 wherein said medium is compatible with a personal computer (PC).

90. The computer usable medium of Claim 89 wherein said personal computer utilizes a HP-UX™ operating environment.

10 91. The computer usable medium of Claim 89 wherein said personal computer utilizes a LINUX™ operating environment.

15 92. The computer usable medium of Claim 89 wherein said personal computer utilizes a SOLARIS™ operating environment.

93. The computer usable medium of Claim 89 wherein said personal computer utilizes a UNIX™ operating environment.

20 94. The computer usable medium of Claim 89 wherein said personal computer utilizes a Microsoft® Windows™ operating environment.